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09/686,370	10/12/2000	Masashi Saito	07553.0010	4800

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EXAMINER

KACKAR, RAM N

ART UNIT	PAPER NUMBER
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1763

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DATE MAILED: 05/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Applicati n No.

09/686,370

Applicant(s)

SAITO ET AL.

Examiner

Ram N Kackar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 May 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 10 is rejected under U.S.C. 112, second paragraph, as being indefinite. Claimed flow is disclosed as 500 m/sec, which is unit of velocity. Flow should be volume/time like SCCM (Standard Cubic Centimeter per Minute) or LPM (Liters per Minute) instead of meters/second.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1,8-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Kurihara et al (JP 409251981A). (Fig5).

In regard to claim 1 Kurihara et al discloses independent gas flow systems comprising, primary gas flow (Fig 5 111 or 112), circulating gas flow, both through plurality of holes (Fig 5 302) and a vacuum apparatus. The ratio of primary to secondary holes appears to be 1, which would be OK for a target flow ratio of primary to secondary of 1. (More on this in Para 10). In regard to claim 8 Kurihara et al discloses buffer space above primary and circulating holes (Fig 5 302). In regard to claim 9 Kurihara et al discloses means for

filtering circulating gas (Fig 1- 113). Claims 10 and 11 pertain to intended use and do not structurally define any thing over Kurihara.

***Claim Rejections - 35 USC § 103***

4 Claim 2-6 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara et al (JP 409251981A). Regarding claim 2 Kurihara discloses a plurality of holes on both primary gas supply and circulating gas supply. Kurihara does not disclose that the hole radius and hole density of gas supply holes are constant over the entire surface and the ratio of the number of primary gas supply holes and number of circulating hole is set equal to the ratio of a target flow rate of primary gas and circulating gas. It would have been obvious to one having ordinary skill in the art at the time of the invention to make the hole radius and hole density of gas supply holes constant over the entire surface to have a uniform distribution of process gas and to make the ratio of the number of primary gas supply holes and number of circulating gas supply holes equal to the ratio of a target flow rate of primary gas and circulating gas in order to get the actual ratio proportionately related to the target ratio. (More on this in Para 10).

5 Regarding claim 3 Kurihara discloses a plurality of holes on primary gas supply as well as circulating gas supply. Kurihara does not disclose that the hole radius of gas supply holes is constant over the entire surface and the ratio of the area over which primary gas supply holes are provided and the area over which circulating holes are provided is set equal to the ratio of a target flow rate of primary gas and circulating gas and that the hole density of circulating gas supply holes is set so as to ensure that the back pressure is equal to or lower than the rated back pressure of evacuating mechanism when

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the circulating gas is supplied at the target flow rate. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the vacuum apparatus of Kurihara to make the hole radius of gas supply holes constant over the entire surface and make sure that the ratio of the area over which primary gas supply holes are provided and the area over which circulating holes are provided is set equal to the ratio of a target flow rate of primary gas and circulating gas and also make sure that the hole density of circulating gas supply holes is set so as to ensure that the back pressure is equal to or lower than the rated back pressure of evacuating mechanism when the circulating gas is supplied at the target flow rate. This modification would ensure uniform distribution of supply gas, maintenance of the ratio of target flows of primary and circulating gases and required flow of circulating gas without increase of back pressure.

- 6           Regarding claim 4 Kurihara discloses a plurality of holes on primary gas supply as well as circulating gas supply. Kurihara does not disclose that the hole density of gas supply holes is constant over the entire surface and the ratio of the area over which primary gas supply holes are provided and the area over which circulating holes are provided is set equal to the ratio of a target flow rate of primary gas and circulating gas and that the hole radius of circulating gas supply holes is set so as to ensure that the back pressure is equal to or lower than the rated back pressure of evacuating mechanism when the circulating gas is supplied at the target flow rate. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the vacuum apparatus of Kurihara to make the hole density of gas supply holes constant over the entire surface and make sure that the ratio of the area over which primary gas supply

holes are provided and the area over which circulating holes are provided is set equal to the ratio of a target flow rate of primary gas and circulating gas and also make sure that the hole radius of circulating gas supply holes is set so as to ensure that the back pressure is equal to or lower than the rated back pressure of evacuating mechanism when the circulating gas is supplied at the target flow rate. This modification would ensure uniform distribution of supply gas, maintenance of the ratio of target flows of primary and circulating gases and required flow of circulating gas without increase of back pressure.

7           Regarding claim 5 Kurihara discloses a plurality of holes on primary gas supply as well as circulating gas supply. Kurihara does not disclose that the ratio of number of primary gas supply holes per unit area and number of circulating gas supply holes per unit area is constant over the entire surface of the gas supply mechanism. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the vacuum apparatus of Kurihara to make sure that the ratio of number of primary gas supply holes per unit area and number of circulating gas supply holes per unit area is constant over the entire surface of the gas supply mechanism in order to ensure uniformity of primary and circulating gas distribution.

8           Regarding claim 6 Kurihara discloses a plurality of holes on primary gas supply as well as circulating gas supply. Kurihara does not disclose that the conductance of the circulating gas supply system is higher than the conductance of the primary gas supply system. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the vacuum apparatus of Kurihara to make sure that the conductance of the circulating gas supply system is higher than the conductance the

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primary gas supply system so as to achieve target circulating flow with lower back pressure at the turbo pump.

- 9           Regarding claim 12 and 13 Kurihara discloses gas flow systems comprising, primary gas flow ( Fig 5 111 or 112), circulating gas flow, both through plurality of holes( Fig 5 302) and a vacuum apparatus. Kurihara does not explicitly disclose the primary gas supply system connected to circulating gas supply holes. It would have been obvious to one having ordinary skill in the art at the time of the invention to be able to have the flexibility of connecting the primary gas, using existing or additional flow rate adjustment means, to circulating gas supply holes also, when circulating supply system was not needed. Regarding hole density of the gas supply holes, it would be obvious to one having ordinary skill in the art at the time of the invention to design them so that the back pressure of the evacuating system is not exceeded. This would be an essential design requirement to make sure that the system worked without problem.

***Response to Amendment***

- 10           Applicants arguments filed on 5/14/2002 are considered but not found to be persuasive. Applicant has argued that Kurihara does not disclose all the features of claim 1. Applicant specially refers to the claim of the ratio of primary to circulating gas supply holes being set equal to the ratio of target primary flow to target circulating flow. Kurihara discloses a system in Fig 5, which shows both kind of holes, as an example, and the ratio appears to be 1. Since, applicant has not claimed a certain ratio of primary to circulating holes, it cannot exclude a ratio disclosed explicitly or implicitly by Kurihara. Also, it would be obvious to one having ordinary skill in the art that flow adjustment

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devices can adjust the flow only within the bounds setup by the radius and number of holes.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N Kackar whose telephone number is 703 305 3996. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703 308 1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9310 for regular communications and 703 872 9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0661.



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RK

May 24, 2002

  
GREGORY MILLS  
SUPERVISORY PATENT EXAMINER  
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